

Snakes (Serpentes, part of Squamata)

Unmistakable. Everyone recognizes snakes, though occasionally things like legless lizards will get confused with snakes.

Note that most snakes have broad belly scales, which are lacking in legless lizards.

Fossils show up about mid-Cretaceous (a bit later than most other groups).

Snake skeletons are fragile and don't preserve well.

Some controversy as to exactly where snakes came from:

Connection to lizards is obvious.

From varanid type lizards?

Or via Mososaurs (also possibly related to varanid type lizards)

As usual, someone did a genetic analysis and now no one knows what to think (seriously!)

Show many adaptations to being long and thin.

Elongated internal organs.

Most with only one functional lung.

Paired organs sometime staggered (e.g., kidneys).

Jaw flexible and distend-able

(Heart can actually move around to prevent damage when swallowing large prey).

Many people are very afraid of snakes.

Probably due to the fact that numerous species can kill people.

But also worshiped in some cultures (particularly Hinduism).

There are between 16 - 18 families of snakes. We won't go through all of them in detail, but will go through most (and make brief mentions of the ones not discussed as we go).

Leptotyphlopidae

Slender blind snakes.

No teeth in upper jaw

Remnants of pelvic girdle, though not visible externally.

Very wide spread (87 species). Get into southern U.S. (two species).

Includes world's smallest snake, Barbados Threadsnake (*Leptotyphlops carlae*)

Eat invertebrates:

Several species can survive in termite nests

Secrete pheromones that prevent termites from attacking (despite the fact that they're munching on termites).

Typhlopidae

Blind snakes

Wide spread - get into southern U.S. (Florida).

Very similar to Leptotyphlopidae, with teeth reduced in the lower jaw (though teeth in upper jaw)

The Brahminy blind snake is the most widely distributed reptile in the world.

Occurs only as females (triploid).

Parthenogenetic - young are all identical to mother.

Spreads through potting soil ("flower pot snake"), ballast, etc.

Now found in Florida.

Anomalepidae

Won't discuss this group - similar to Leptotyphlopidae - see text if interested. Not in U.S., not well known.

Tropidophiidae

Dwarf Boas

Mostly central America and Caribbean, though a few species in south east Asia.

Have some traits that are shared with both booid type snakes and colubrids.

Vestigial hind limbs visible in males.

Family is undergoing reorganization (some of the south east Asian species may be in a different family).

(So what else is new?)

Fairly small (only up to about 60cm).

Quite colorful - and can change color depending on their activity level.

Aniliidae

Closely related to the previous group. “False coral snakes”. South America (Amazon Basin).

Won't discuss this group (see text if interested). Only one species.

Cylindrophiidae and Uropeltidae

Again, two closely related families that we won't discuss in detail.

Fossorial, and in forested areas; occur in South East Asia (Cylindrophiidae), and southern India (Uropeltidae).

Not well known, but are both viviparous.

Bolyeriidae

Confined to Mauritius and surrounding islands. Two species, but one is thought to be extinct.

Have a two part lower jaw that is hinged:

Front and back part of each side of lower jaw articulates.

Get very close to prey before striking.

Jaw may have evolved to help catch skinks.

Formerly placed into the boas.

Xenopeltidae

Sunbeam snakes

Found in south east Asia.

Iridescent scales.

Not well known in the wild. Found in the pet trade, but generally do very poorly.

Blunt heads.

Occur in a wide range of habitats. Near water, up to 700m.

Loxocemidae

Mesoamerican Python. Related to previous group . Not well known. Occurs only on the western side of central America (single species).

Pythonidae

Old world tropics, including Australia.

26 species. Most large to very large.

All are oviparous, and most show parental care by coiling around eggs.

(One species can “warm” eggs using elevated body temperature through muscle contractions - *Python molurus*).

Most feed on birds and mammals, particularly when they get larger.

Vestigial spurs visible.

Kill prey by constriction.

Some have recently been heavily hunted and are or may be threatened in the near future.

Pet trade also hasn't helped here;

However, the Burmese python, which is threatened in the wild is currently making a mess out of Florida.

Boidae

New World, but also common in Africa and southern Asia.

Vestigial hindlimbs.

Most are viviparous (unlike pythons).

Like pythons, kill by constriction.

Several species occur in the U.S. (natively), including the rubber and rosy boas (Western U.S.)

Includes the largest species of snake (depending on how you measure):

Green anaconda, *Eunectes murinus*, somehow (amusingly) named for eating mice.

Heavier than reticulated python (*Python reticulatus*), but probably not as long (based on believable records).

Acrochordidae

File Snakes; 3 species, all aquatic (basically can't move on land). Won't discuss this group, though will say that they use constriction to capture fish.

Viperidae

Vipers and pit vipers.

Worldwide, except Australia.

Rotating fangs, venomous.

Most have thicker bodies and triangular shaped head.

Pit vipers have infrared sensors.

Obviously fairly common in the U.S.

Copperhead in Fairfax County, Timber rattlesnake gets to Bull Run Mountain (or used to).

Lots of rattlesnakes.

Mojave rattlesnake is probably most dangerous snake in U.S. due to large amounts of neurotoxin.

Gaboon viper - largest fangs (up to two inches).

Also can inject a massive amount of venom.

Puff adder - causes more fatalities due to snakebite in Africa than any other snake.

Occur in well populated areas and blend in to background extremely well.

Not seen until almost stepped on.

Considering that even untreated patients usually survive, it's amazing that it's so deadly.

(Worldwide, estimates are that between 20,000 and 94,000 deaths occur every year from snakebite).

Colubridae

The biggest family of snakes.

Very wide spread; occurs everywhere except parts of Australia and areas of extreme cold.

A bit of a catch all - snakes that don't fit into other related families are placed in the Colubridae.

Text mentions that about 60% of snake species belong here.

No really good unifying characteristics except some skull characteristics.

Includes most of our common snakes, particularly around here.

Rat snakes, Racers, Corn snakes, Garter snakes, etc.

Your text subdivides these into numerous subfamilies; we won't bother with this.

Some rear fanged species can be quite dangerous.

Boomslang (*Dispholidus typus*)

Atractaspididae

Mole vipers.

Small group of mostly fossorial venomous snakes (related to Elapids).

Occur throughout Africa and into the Middle East.

Most are not dangerous to humans.

Many live in burrows.

Elapidae

Cobras, Kraits, etc.

Very widespread, even ocean going.

Venomous - greatest diversity in Australia.

Fangs not movable.

Includes well known snakes:

Spitting cobra, Black mamba, Eastern coral snake, Tiger snakes

Sea snakes also (currently) placed in Elapidae